STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

IN RE: **Edwards Air Force Base – Air Force Research Lab Water System**
Water System No. 1510702

TO: Mr. Renato Ramos
Edwards Air Force Base - Air Force Research Lab
55 N. Wolfe Ave. 95 AMDS/SGPB
Edwards AFB, CA 93524

BY REGISTERED MAIL

CITATION FOR NONCOMPLIANCE -- Water System No. 1510702
TOTAL COLIFORM MCL VIOLATION – November 2013
Citation No. 03-19-14C-005

Issued on March 11, 2014

STATEMENT OF FACTS

Edwards Air Force Base (EAFB) – Air Force Research Lab (AFRL) Water System (hereinafter Water System) is classified as a non-transient non-community water system and serves a population of approximately 437 persons through 117 service connections. The Water System has three (3) active sources of supply, AFRL Well A (PS Code: 1510702-001), AFRL Well B (PS Code: 1510702-002), AFRL Well C (PS Code: 1510702-003), one standby source, AFRL Well D (PS Code: 1510702-004), and seven storage tanks with a total available storage capacity of 1.975 million gallons. The Water System also has the ability to purchase treated surface water from Antelope Valley East Kern Water Agency (hereinafter AVEK). Currently, status of AVEK intertie's is standby and the Water Sysem is completely on groundwater. Continuous chlorination treatment is provided to the well water using sodium hypochlorite solution. The Water System operates under the authority of a domestic

water supply permit (No. 03-12-95P-049) issued on December 27, 1995, by the State Department of Health Services (now State Department of Public Health.

The Southern California Drinking Water Field Operations Branch, Division of Drinking Water and Environmental Management, California Department of Public Health (hereinafter "Department") is responsible for enforcing the Safe Drinking Water Act and regulations promulgated pursuant thereto.

- The EAFB – AFRL Water System (hereinafter Water System) is required to collect two (2) routine bacteriological samples per week.
- One (1) out of the two (2) weekly routine bacteriological quality samples collected on November 27, 2013, from the distribution system tested positive for total coliform bacteria.
- One (1) out of the three (3) repeat samples collected on November 29, 2013, from the distribution system, tested positive for total coliform bacteria.
- One (1) source bacteriological quality sample collected on November 29, 2013, from AFRL Well A (counted towards the Ground Water Rule's trigger source sampling requirement), tested negative for total coliform bacteria.
- None of the bacteriological quality samples collected in November 2013, from the distribution system, tested positive for *E.coli* bacteria.
- **EAFB – AFRL Water System failed the total coliform maximum contaminant level (MCL) for November 2013 [Section 64426.1(b)(1) *Authorities*].**
- On November 30, 2013, Lieutenant Miles Chen from the EAFB – AFRL, notified the Department via email that the Water System failed the total coliform MCL for November 2013.

- On December 10, 2013, a public notice and Proof of Notification were emailed to the Water System for the November 2013 total coliform MCL failure.
- On December 20, 2013, the Department received signed and dated copies of the public notice and Proof of Notification from the Water System. According to these documents, public notification was completed on December 20, 2013.
- On December 10, 2013, an investigation report template (copy provided in **Attachment B**) was emailed to the Water System for the November 2013 total coliform MCL failure. **The completed investigation report was due on December 24, 2013.**
- **To date, the Department has not received a completed copy of the investigation report, in response to the November 2013 total coliform MCL failure [Section 64426(b)(2), *Authorities*].**
- **It is unknown the steps taken by the Water System, to clear bacteriological contamination, following the November 2013 total coliform MCL violation.**
- All eight (8) routine bacteriological samples collected in December 2013, from the distribution system, tested negative for total coliform bacteria.
- All ten (10) routine bacteriological samples collected in January 2014, from the distribution system, tested negative for total coliform bacteria.
- Results of all bacteriological samples collected from January 2013 to January 2014 are summarized in **Attachment A**.
- A review of the Department's records indicates that the Water System has not been conducting quarterly raw water bacteriological monitoring of the groundwater sources. This issue was also discussed by the Department in the 2012 sanitary survey findings letter (dated May 30, 2013). It is noted that during 2013-14, only AFRL Well A was sampled once for total coliform

bacteria, on November 29, 2013 (*see* summary of the 2013-14 source bacteriological results in **Attachment A**).

AUTHORITIES

Section 116577 of the CHSC, states in relevant part:
"(a) Each public water system shall reimburse the department for the actual costs incurred by the department for any of the following enforcement activities related to that water system:

(1) Preparing, issuing, and monitoring compliance with, an order or citation.
(2) Preparing, and issuing public notification

(b) The department shall submit an invoice for these enforcement costs to the public water system that requires payment prior to September 1 of the fiscal year following the fiscal year in which the costs were incurred. The invoice shall indicate the total hours expended the reasons for the expenditure, and the hourly cost rate of the department. The costs set forth in the invoice shall not exceed the total actual costs to the department of the enforcement activities specified in this section."...

Section 116650 of the California Health and Safety Code (hereinafter CHSC), states in relevant part:
"(a) If the department determines that a public water system is in violation of this chapter or any regulation, permit, standard, or order issued or adopted thereunder, the department may issue a citation to the public water system. The citation shall be served upon the public water system personally or by registered mail.
(b) Each citation shall be in writing and shall describe with particularity the nature of the violation, including a reference to the statutory provision, standard, order, or regulation alleged to have been violated.
(c) For continuing violations, the citation shall fix the earliest feasible time for elimination or correction of the condition constituting the violation where appropriate. If the public water system fails to correct a violation within the time specified in the citation, the department may assess a civil penalty as specified in subdivision (e).
(d) For a noncontinuing violation of primary drinking standards, the department may assess in the citation a civil penalty as specified in subdivision (e).
(e) Citations issued pursuant to this section shall be classified according to the nature of the violation or the failure to comply. The department shall specify the classification in the citation and may assess civil penalties for each classification as follows:

(1) For violation of a primary drinking standard, an amount not to exceed one thousand dollars ($1,000) per day for each day that the violation occurred, including each day that the violation continues beyond the date specified for correction in the citation or order.
(2) For failure to comply with any citation or order issued for violation of a secondary drinking water standard that the director determines may have a direct or immediate relationship to the welfare of the users, an amount not to exceed one thousand dollars ($1,000) for each day that the violation continues beyond the date specified for correction in the citation or order.

(3) For failure to comply with any citation or order issued for noncompliance with any department regulation or order, other than a primary or secondary drinking water standard, an amount not to exceed two hundred dollars ($200) per day for each day the violation continues beyond the date specified for correction in the citation."

Section 116655 of the CHSC, states in relevant part:
"(a) Whenever the department determines that any person has violated or is violating this chapter, or any permit, regulation, or standard issued or adopted pursuant to this chapter, the director may issue an order doing any of the following:

(1) Directing compliance forthwith.
(2) Directing compliance in accordance with a time schedule set by the department.

(3) Directing that appropriate preventative action be taken in the case of a threatened violation.

(b) An order issued pursuant to this section may include, but shall not be limited to, any or all of the following requirements:

(2) That purification or treatment works be installed."

California Code of Regulations (hereinafter, CCR), Title 22, Section 64423, Table 64423-A establishes the minimum routine sampling requirements, and states in relevant part:

Monthly Population Served	*Service Connections*	*Minimum Number of Samples*
25 to 1000	15 to 400	1 per month
1,001 to 2,500	401 to 890	2 per month
2,501 to 3,300	891 to 1,180	3 per month
3,301 to 4,100	1,181 to 1,460	4 per month
4,101 to 4,900	1,461 to 1,750	5 per month
4,901 to 5,800	1,751 to 2,100	6 per month
5,801 to 6,700	2,101 to 2,400	7 per month
6,701 to 7,600	2,401 to 2,700	2 per week
7,601 to 12,900	2,701 to 4,600	3 per week
12,901 to 17,200	4,601 to 6,100	4 per week
17,201 to 21,500	6,101 to 7,700	5 per week
21,501 to 25,000	7,701 to 8,900	6 per week
25,001 to 33,000	8,901 to 11,800	8 per week
33,001 to 41,000	11,801 to 14,600	10 per week
41,001 to 50,000	14,601 to 17,900	12 per week
50,001 to 59,000	17,901 to 21,100	15 per week

CCR, Title 22, Section 64426.1 establishes the total coliform maximum contaminant level and states in relevant part:

"(a) Results of all samples collected in a calendar month pursuant to Sections 64423, 64424, and 64425 that are not invalidated by the Department or the laboratory shall be included in determining compliance with the total coliform MCL. Special purpose samples such as those listed in 64421(b) and samples collected by the water supplier during special investigations shall not be used to determine compliance with the total coliform MCL.

(b) A public water system is in violation of the total coliform MCL when any of the following occurs:

(1) For a public water system which collects at least 40 samples per month, more than 5.0 percent of the samples collected during any month are total coliform-positive; or

(2) For a public water system with collects fewer than 40 samples per month, more than one sample collected during any month is total coliform-positive; or

(3) Any repeat sample is fecal coliform-positive or E. coli-positive; or

(4) Any repeat sample following a fecal coliform-positive or E. coli-positive routine sample is total coliform-positive.

(c) If a public water system is not in compliance with paragraphs (b)(1) through (4), during any month in which it supplies water to the public, the water supplier shall notify the Department by the end of the business day on which this is determined, unless the determination occurs after the Department office is closed, in which case the supplier shall notify the Department within 24 hours of the determination. The water supplier shall also notify the consumers served by the water system. A Tier 2 Public Notice shall be given for violations of paragraphs (b)(1) or (2), pursuant to section 64463.4. A Tier 1 Public Notice shall be given for violations of paragraphs (b)(3) or (4), pursuant to section 64463.1."

CCR, Title 22, Section 64426(b)(2) establishes the requirement to submit an investigation report to the Department and states in relevant part:
(b) When the coliform levels specified in subsection (a) are reached or exceeded, the water supplier shall:
(2) Submit to the Department information on the current status of physical works and operating procedures which may have caused the elevated bacteriological findings, or any information on community illness suspected of being waterborne. This shall include, but not be limited to:
(A) Current operating procedures that are or could potentially be related to the increase in bacterial count;
(B) Any interruptions in the treatment process;
(C) System pressure loss to less than 5 psi;
(D) Vandalism and/or unauthorized access to facilities;
(E) Physical evidence indicating bacteriological contamination of facilities;
(F) Analytical results of any additional samples collected, including source samples;
(G) Community illness suspected of being waterborne; and
(H) Records of the investigation and any action taken.

DETERMINATIONS

Based upon the above Statement of Facts and Authorities, the Department determines that the EAFB – AFRL Water System has violated the following:

1. CCR, Title 22, Section 64426.1(b)(2); Specifically, the Water System violated the total coliform MCL for November 2013 when more than one sample collected from the Water System, tested positive for total coliform bacteria.

2. CCR, Title 22, Section 64426(b)(2); Specifically, the Water System failed to submit the investigation report to the Department in response to the November 2013 bacteriological MCL failure.

The above violations are classified as non-continuing violations.

DIRECTIVES

Edwards Air Force Base – Air Force Research Lab Water System is hereby directed to take the following actions:

1. The Water System shall complete the investigation report to determine the cause of the total coliform positive samples in November 2013. By **March 17, 2014**, the completed investigation report shall be submitted to the Department.

2. The Water System shall comply with the Department directive and start conducting quarterly bacteriological monitoring of its groundwater sources. Monthly monitoring is recommended.

3. The Water System shall reimburse the Department, in accordance with an invoice that shall be provided to the Water System, the costs for enforcement activities, and such reimbursement shall be made prior to September 1 of the fiscal year (or by a different date if specified by the Department) following the fiscal year in which such costs are incurred as described in CHSC Section 116577(a)(1-2) and 116577(b).

FURTHER ENFORCEMENT ACTIONS

Section 116270, Division 104, Part 12, Chapter 4 of the CHSC authorizes the Department to: issue additional citations with assessment of penalties if the public water system continues to fail to correct a violation identified in a citation; take action to suspend or revoke a permit that has been issued to a public water system if the system has violated applicable law or regulations or has failed to comply with orders of the Department; and petition the superior court to take various enforcement measures against a public water system that has failed to comply with orders of the Department. The Department does not waive any further enforcement action by issuance of this citation.

PARTIES BOUND

This citation shall apply to and be binding upon EAFB – AFRL, its officers, directors, agents, employees, contractors, successors, and assignees.

SEVERABILITY

The directives of this citation are severable, and EAFB – AFRL shall comply with each and every provision thereof, notwithstanding the effectiveness of any other provision.

CIVIL PENALTY

Section 116650, subsection (d) and (e) of the CHSC allow for the assessment of a civil penalty for the failure to comply with the requirements of the Safe Drinking Water Act. Failure to comply with any Directive of this Citation may result in the Department imposing an administrative penalty of not less than $200 (two hundred dollars) for each day that the violation continues beyond the date set for correction in this Citation.

The Department does not waive any further enforcement action by issuance of this citation, and expressly reserves the right to issue a citation with penalties for the violations on which the Directives of this citation are based.

March 11, 2014
Date

Jaswinder S. Dhaliwal, P.E.
Senior Sanitary Engineer
Tehachapi District
SOUTHERN CALIFORNIA BRANCH
DRINKING WATER FIELD OPERATIONS

Attachments

Attachment A: Bacteriological Summary January 2013 through January 2014
Attachment B: Blank Investigation Report Form

cc: Kern County Environmental Health Services Department (w/o attachments)
Jose Pagan Davila, 2nd Leutentant, EAFB-AFRL
Isreal Espinosa, Technical Sergeant, EAFB-AFRL

JSD/dc

Attachment A

Edwards AFB - Air Force Research Lab

1510702 *Distribution System Freq: 2/W*

Sample Date	*Time*	*Location*	*T Coli*	*E Coli*	*F Coli*	*Type*	*Cl2*	*Violation*	*Comment*
1/1/2013		10 Samples	A	A		Routine	0.46 - 0.95		
2/1/2013		8 Samples	A	A		Routine	0.92 - 1.17		
3/1/2013		8 Samples	A	A		Routine	0.05 - 8.59		
4/1/2013		8 Samples	A	A		Routine	0.90 - 1.53		
5/1/2013		10 Samples	A	A		Routine	0.41 - 1.39		
6/1/2013		8 Samples	A	A		Routine	0.34 - 1.04		
7/1/2013		10 Samples	A	A		Routine	0.8 - 1.75		
8/1/2013		8 Samples	A	A		Routine	0.56 - 2.1		
9/1/2013		8 Samples	A	A		Routine	0.53 - 0.95		
10/1/2013		10 Samples	A	A		Routine	0.48 - 1.62		
11/1/2013		7 Samples	A	A		Routine	0.57 - 1.36		
11/27/2013	7:47	8352 AFRL	P	A		Routine	0.86		
11/30/2013	16:48	8352 AFRL	A	A		Repeat	1.09		
11/30/2013	17:00	8353 AFRL (Upstream)	P	A		Repeat	1.01		*MCL. Citation #03-19-14C-005 issued.*
11/30/2013	17:05	1705 8351 AFRL (Downs	A	A		Repeat	1.14		
12/1/2013		8 Samples	A	A		Routine	0.54 - 1.04		
1/1/2014		10 Samples	A	A		Routine	0.25 - 1.15		

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Source Monitoring Freq:

Sample Date	*Time*	*Source*	*T Coli*	*E Coli*	*F Coli*	*Violation*	*Comment*
11/30/2013	16:15	AFRL Well A	A	A			

Attachment B

POSITIVE TOTAL COLIFORM INVESTIGATION

This form is intended to assist public water systems in completing the investigation required by the California Department of Public Health (Section 64426(b) of Title 22, California Code of Regulations) and may be modified to take into account conditions unique to the system.

ADMINISTRATIVE INFORMATION

PWS Name:		PWSID NUMBER:	
	Name	**Address**	**Telephone #**
Operator in Responsible Charge (ORC)			
Person that collected TC samples if different than ORC			
Owner			
Certified Laboratory for Microbiological Analyses			
Date Investigation Completed:			
Name of Month(s) and Year of Total Coliform MCL Failure:			

INVESTIGATION DETAILS

SOURCE	WELL (name)	WELL (name)	WELL (name)	WELL (name)	COMMENTS
1. Inspect each well head for physical defects and report					
a. Is raw water sample tap upstream from point of disinfection?					
b. Is wellhead vent pipe screened?					
c. Is wellhead seal watertight?					
d. Is well head located in pit or is any piping from the wellhead submerged?					
e. Does the ground surface slope towards well head?					
f. Is there evidence of standing water near the wellhead?					
g. Are there any connections to the raw water piping that could be cross connections? (describe all connections in comments)					
h. Is the wellhead secured to prevent unauthorized access?					
i. To what treatment plant (name) does this well pump?					
j. How often do you take a raw water total coliform (TC) test?					
k. Provide the date and result of the last TC test at this location					

TREATMENT	PLANT (NAME)	PLANT (NAME)	PLANT (NAME)	PLANT (NAME)	COMMENTS
1. If you provide continuous chlorination treatment, was there any equipment failure?					
a. Did the distribution system maintain a chlorine residual?					
b. Was emergency chlorination initiated?					

POSITIVE TOTAL COLIFORM INVESTIGATION

TREATMENT	PLANT (NAME)	PLANT (NAME)	PLANT (NAME)	PLANT (NAME)	COMMENTS
c. If yes, for how long?					
2. Did the distribution system lose chlorine residual?					
3. If you do not provide routine chlorination, was emergency chlorination initiated?					
If Yes,, when?					
4. Inspect each point where disinfectant is added and report					
a. For hypochlorinator systems					
1. Is the disinfectant feed pump feeding disinfectant?					
2. What is the feed rate of disinfectant in ml/minute					
3. What is the concentration of the disinfectant solution being fed? (percent, or mg/l of chlorine as HOCl)					
4. By what method was the concentration of solution determined? (ex: measured, manufacturer's literature)					
5. What is the age (days) of the disinfectant solution currently being used at this treatment location?					
6. What is the raw water flow rate at the point where disinfectant is added in gallons per minute?					
7. What is the **total** chlorine residual measured immediately downstream from the point of application?					
8. What is the **free** chlorine residual measured immediately downstream from the point of application?					
9. What is the contact time in minutes from the point of disinfectant application to the first customer?					

STORAGE	TANK (name)	TANK (name)	TANK (name)	TANK (name)	COMMENTS
1. Is each tank locked to prevent unauthorized access?					
2. Are all vents of each tank screened down-turned to prevent dust and dirt from entering the tank?					
3. Is the overflow on each tank screened?					
4. Are there any unsealed openings in the tank such as access doors, water level indicators hatches, etc.?					
5. Is the roof/cover of the tank sealed and free of any leaks.					
6. Is the tank above ground or buried.					
a. If buried or partially buried, are there provisions to direct surface water away from the site.					
b. Has the interior of the tank been inspected to identify any sanitary defects, such as root intrusion?					

POSITIVE TOTAL COLIFORM INVESTIGATION

STORAGE	TANK (name)	TANK (name)	TANK (name)	TANK (name)	COMMENTS
7. Does the tank "float" on the distribution system or are there separate inlet and outlet lines?					
8. What is the **measured** chlorine residual (total/free) of the water exiting the storage tank **today**?					
9. What is the volume of the storage tank in gallons?					
10. Is the tank baffled?					
11. Prior to the TC+ or EC+, what was the previous date items #1-7 were checked and documented?					

DISTRIBUTION SYSTEM	SYSTEM RESPONSES
1. What is the minimum pressure you are maintaining in the distribution system?	
2. Did pressure in the distribution system drop to less than 5 psi prior to experiencing the TCR positive finding.	
3. Has the distribution system been worked on within the last week? (service taps, hydrant flushing, main breaks, main extensions, etc.) If yes, provide details.	
4. Are there any signs of excavations near your distribution system not under the direct control of your maintenance staff?	
5. Did you inspect your distribution system to check for mainline leaks? Do you or did you have a mainline leak?	
6. If there was a mainline leak, when was it repaired?	
7. On what date was the distribution system last flushed?	
8. Is there a written flushing procedure you can provide for our review?	
9 Do you have an active cross connection control program?	
10. What is name and phone number of your Cross-Connection Control Program Coordinator?	
11. Is the review and testing of backflow prevention devices current?	
12. On what date was the last physical survey of the system done to identify cross-connections?	

BOOSTER STATION **SYSTEM RESPONSES**

1. **Do you have a booster pump? How many?**
2. **Do you have a standby booster pump if the main pump fails?**
3. **Prior to bacteriological quality problems, did your booster pump fail?**
4. **Do you notice standing water, leakage at the booster station?**

POSITIVE TOTAL COLIFORM INVESTIGATION

SAMPLE SITE EVALUATION (Complete for all TC+ or EC+ findings)	Routine Site TC+ or EC+	Upstream Site	Downstream Site	Sample 4 (specify)
1. What is the height of the sample tap above grade? (inches)				
2. Is the sample tap located in an **ext**erior location or is it protected by an **enc**losure?				
3. Is the sample tap threaded, have a swing arm (kitchen sink) or aerator (sinks)?				
4. Is the sample tap in good condition, free of leaks around the stem or packing?				
5. Can the sample tap be adjusted to the point where a good laminar flow can be achieved without excessive splash?				
6. Is the sample tap and area around the sample tap clean and dry (free of animal droppings, other contaminants or spray irrigation systems)				
7 Is the area around the sample tap free of excessive vegetation or other impediments to sample collection				
8. Describe how the tap was treated in preparation for sample collection (ran water, swabbed with disinfectant, flamed, etc.)				
9. Is this sample tap designated on the sampling plan submitted with this information request?				
10. What were the weather conditions at the time of the positive sample (rainy, windy, sunny),				

GENERAL OPERATIONS:	Response
1. Where there any power outages that affected water system facilities during the 30 days prior to the TC+ or EC + findings?	
2. Where there any main breaks, water outages, or low pressure reported in the service area where TC+ or EC+ samples were located.	
3. Does the system have backup power or elevated storage?	
4. During or soon after bacteriological quality problems, did you receive any complaints of any customers' illness suspected of being waterborne? How many?	
5. What were the symptoms of illness if you received complaints about customers being sick?	

ADDITIONAL INFORMATION TO BE SUBMITTED WITH RESPONSES TO THE ABOVE QUESTIONS

1. **Sketch** of System showing all sources, treatment locations, storage tanks, microbiological sampling sites and general layout of the distribution system including the location of all hazardous connections such as the wastewater treatment facility.

POSITIVE TOTAL COLIFORM INVESTIGATION

2. A set of photographs of the well, pressure tanks, and storage tanks in the system may be submitted if they would show that the contamination is directly related and changes have been made since the last inspection by our Department
3. Name, certification level and certificate number of the Operator in Responsible Charge.
4. Copy of the last cross connection survey performed that identifies the location of all unprotected cross connections.

SUMMARY: BASED ON THE RESULTS OF YOUR INVESTIGATION AND ANY OTHER INFORMATION AT YOUR DISPOSAL, WHAT DO YOU BELIEVE TO BE THE CAUSE OF THE POSITIVE TOTAL COLIFORM SAMPLES FROM YOUR PUBLIC WATER SYSTEM?

CERTIFICATION: I CERTIFY THAT THE INFORMATION SUBMITTED IN RESPONSE TO THE QUESTIONS ABOVE IS ACCURATE TO THE BEST OF MY PROFESSIONAL KNOWLEDGE

NAME:_____ **TITLE:**_____ **DATE:** _____